MEMORANDUM FOR: Distribution

FROM: W/OPS1 - Mark Paese (acting)

SUBJECT: Expansion of Console Replacement System (CRS)

1. Material Transmitted:

    Engineering Handbook No. 7 (EHB-7), Communications Equipment,
    Section 3.4, Modification Note 49, Revision A, Errata 2 Console
    Replacement System Output Channel Expansion (Large 8 to a
    Maximum 9).

2. Summary:

    Request for Change AA549 authorizes CRS expansion for Weather
    Forecast Office (WFO) Greenville-Spartanburg, SC (GSP).

3. Effect on Other Instructions:

    Incorporated changes in the procedure are due to upgrades in
    software for the specific site.

    Distribution:
    W/OPS12 - J. Nathan   W/ER41x4 - H. Machado
    W/OPS13 - TRL   W/WFO - CLE - T. Rutkowski
    W/OPS13 - M. Brown   W/WFO - PHI - R. Paxson
    W/OPS13 - J. Sabel   W/WFO - GSP - B. Campbell
    W/OPS16 - A. Morris   W/WFO - GSP - N. Schroth
    W/OS612 - B. Ryman

COMMUNICATIONS EQUIPMENT MODIFICATION NOTE 49, Revision A, Errata 2
(for Electronics Technicians)
Maintenance, Logistics, and Acquisition Division
W/OPS12:GSS

SUBJECT	:	Console Replacement System (CRS) Output Channel Expansion
PURPOSE	:	To expand the capabilities of the CRS system from a Large 8-channel to a Maximum 9-channel configuration.

SITES   :   <u>Site Name</u>   <u>SID</u>   <u>Org. Code</u>
AFFECTED   WFO Greenville-Spartanburg, SC   GSP   WN9312

EQUIPMENT   :   CRS (B440)
AFFECTED

PARTS REQUIRED   :   W/OPS12 will issue the parts required to each site from the National Logistics Support Center under the applicable approved site-specific Request for Change.

(1) Front-end processor (FEP) holddown strap (ASN: B440-STRAP)
(1) FEP computer (ASN: B440-2A2)
(1) FEP hard disk drive (HDD) (ASN: B440-2A2A8-FEP)
(1) Local area network (LAN) board (ASN: B440-1A8A10)
(1) LAN cable segment (ASN: B440-2W1)
(1) BNC tee connector (ASN: B440-4J1)
(1) FEP switch VGA video cable (ASN: B440-2W3)
(1) FEP switch PS/2 keyboard cable (ASN: B440-2W4)
(1) Audio switch module (ASM) cards (ASN: B440-2A6A3)
(1) DECtalk-ASM audio cable (ASN: B440-4W12)
(1) DOS formatted diskette with CRS test database ASCII files (provided by W/OPS12)

PARTS SUPPLIED   :   The following parts shall be provided by the site:
BY THE SITE   (1) Transmitter audio output cable
                     Cable marking tags and tie-wraps, as needed

TOOLS AND   :   #1 and #2 Phillips screwdrivers
TEST EQUIPMENT   CRS test database ASCII files diskette provided by W/OPS12
REQUIRED   (see Parts Required)
                     Small flat-blade jeweler's screwdriver
                     Root mean square (RMS) voltmeter/dB meter
                     600-ohm dummy load with a RJ-11 plug attached
                     Anti-static workstation kit

TIMEREQUIRED	:	2Hours
EFFECTONOTHER INSTRUCTIONS	:	None.
AUTHORIZATION	:	TheauthorityforthismodificationisRequestforChangeAA549.
VERIFICATION STATEMENT	:	ThisprocedurewastestedandverifiedatNationalWeatherService Headquarters,SilverSpring,Maryland(SLVM2).
GENERAL	:	Theattachmentsinthisprocedurecontaintheinstructionstoadd outputchannel(s)totheCRSsystem.
PROCEDURE	:	Attachment**A** explains how to implement this modification. Attachment **B** provides reference information. Attachment **C** provides verification of the new physical configuration (used before applying power). Attachment **D** provides a completed sample of WS Form A-26, Maintenance Record.
REPORTING INSTRUCTIONS	:	Report the completed modification on WS Form A-26 according to the instructions in Engineering Handbook No. 4 (EHB-4), Engineering Management Reporting System (EMRS), Part 2, and Appendix I. Include the following information on the WS Form A-26:

    a. An equipment code of **CRSSA** in block 7.
    b. A serial number of **001** in block 8.
    c. The **ASN** and **NSN** of the FEP in block 13.
    d. A Mod No. of **49A** in block 17a.
    e. **Serial number** of the FEP in block 18.

    A sample WS Form A-26 is provided as attachment **D**.

Mark Paese (acting)
Chief, Maintenance, Logistics, and Acquisition Division

Attachment **A** - Modification Procedure
Attachment **B** - CRS Hardware Drawings
Attachment **C** - New Configuration Physical Verification Procedure
Attachment **D** - WS Form A-26 Sample

Attachment A

Modification Procedure

Attachment A
Modification Procedure

Overview

This modification note provides instructions for expanding a Console Replacement System (CRS) from a Large 8-channel configuration to a Maximum 9-channel configuration. The modification procedure contains seven parts:

1. CRS Power-Down Procedures
2. Equipment Upgrade Procedures
3. CRS Power-Up Procedures
4. CRS Login, Application Software Error Verification, and Test Database ASCII File Loading Procedures
5. Post Hardware Expansion Channel Operability Verification Procedures
6. Adding New Transmitter Channels and Editing Site Database ASCII File Procedures
7. ASM Alignment Procedures

NOTE: 1. Read the entire procedure and verify receipt of all required parts before proceeding with the modification.

2. Coordinate with the operations staff before performing this procedure.

CAUTION

CRS must be down to perform the expansion modification. This modification contains test messages that should not be broadcast on any transmitter.

In addition, the site database ASCII file will be recompiled, and all dictionary files will be lost! Switch to the backup NWR system, and ensure the dictionary files are backed up (see the *CRS Administration Manual*) before performing this modification.

NOTE: 3. Perform the new 3FEP setup procedures in part 2, sections 2.1, 2.2, and 2.3, before shutting down the system. This will save downtime on an operational CRS.

PART 1–CRS POWER-DOWN PROCEDURES

1.1 CRS Application Shutdown Procedure

      1.   Click the **System** menu, and click **Stop System**.

      2.   Wait until all icons on the *CRS System Status* menu turn **red**.

1.2 UNIX Shutdown Procedure

NOTE:	1. The shutdown of the CRS application is just one task before the graceful power-down. After stopping the CRS application software, implement a "controlled/orderly UNIX shutdown with NO automatic reboot" on the main processor (MP), and implement a "controlled/orderly UNIX shutdown" on all FEPs. Once the controlled/orderly UNIX shutdown is complete, power-down the processors in the following order: MPs followed by the FEPs.

      1.   Click the **Maintenance** menu in the main CRS menu to access the *Maintenance* pull-down menu.

      2.   Click **UNIX Shell** in the Maintenance pull-down menu. A *UNIX xterm* window pops up for the entry of UNIX commands.

      3.   Type the following UNIX command in the *xterm* window:

               su root

      4.   Press the **Enter** key. The shell responds with a prompt to enter root passwords.

      5.   Type the password for the root.

      6.   Press the **Enter** key. The shell prompt changes to a pound sign when all subsequent UNIX command entries have root authority.

      7.   Type the following UNIX command in the *xterm* window:

               rsh 5MP /sbin/shutdown -i0 -g0 -y

      8.   Press the **Enter** key. The shell command prompt returns after displaying a confirmation of shutdown initiation on 5MP. UNIX on processor 5MP shuts down.

      9.   Type the following UNIX command in the *xterm* window:

               rsh 1FEP /sbin/shutdown -i0 -g0 -y

     10.   Press the **Enter** key. The shell command prompt returns after displaying a confirmation of shutdown initiation on 1FEP. UNIX on processor 1FEP shuts down.

     11.   Type the following UNIX command in the *xterm* window:

               rsh 2FEP /sbin/shutdown -i0 -g0 -y

EHB-7   Revision A, Errata 2
Issuance 02-09
03/21/02   A-2

12. Press the **Enter** key. The shell command prompt returns after displaying a confirmation of shutdown initiation on 2FEP. UNIX on processor 2FEP shuts down.

13. Type the following UNIX command in the *xterm* window:

    rsh 4BKUP /sbin/shutdown -i0 -g0 -y

14. Press the **Enter** key. The shell command prompt returns after displaying a confirmation of shutdown initiation on 4BKUP. The UNIX on processor 4BKUP shuts down.

15. Type the following UNIX command in the *xterm* window:

    cd/

16. Press the **Enter** key.

17. Type the following UNIX command in the *xterm* window:

    /sbin/shutdown -i0 -g0 -y

18. Press the **Enter** key. You may safely power down each CRS processor for the system when UNIX displays the following message:

    Press any key to reboot…

NOTE: 2. Do not reboot any machine; go to section 1.3.

1.3 CRS Hardware Power-Down Procedure

Power down all CRS equipment at the operator's station and in the equipment room by turning off the following:

Operators Station	Equipment Room
0MP and Monitor	4BKUP
5MP and Monitor	1FEP
NWRSAME (all)	2FEP
	LAN Bridge
	LAN Server
	Monitor
	Printer
	Audio switching assembly (ASA) power supplies
	Modem

PART 2–EQUIPMENT UPGRADE PROCEDURES

NOTE:	1.	You can perform the new 3FEP setup procedures in part 2, sections 2.1 and 2.2, before shutting down the system. This step will save downtime on an operational CRS system.

2.1 Preliminary Setup of 3FEP Procedure

NOTE:	1.	You must remove and replace circuit cards in an anti-static work area using approved anti-static procedures.

1. Remove the right side cover of the new **3FEP** unit as follows:

   a. Remove the right three screws on the back of the system unit (see attachment **B**, figure A-1). These screws secure the right side access panel to the chassis.

   b. Pull the panel backward while lifting it upward.

2. Remove the screws holding expansion slot covers 1 through 4. Keep the screws (see attachment **B**, figure A-13).

3. Remove the expansion slot covers.

4. Install the new LAN card (ASN: B440-1A8A10) in expansion slot number 1; reinstall a retaining screw.

2.2 Installation of the HDD and Cage Combination in the New 3FEP Procedure

1. Align the three slides on the HDD cage with the three slots on the upper left corner of the chassis.

2. Insert the slides into the slots holding the HDD cage away from the chassis at an angle.

3. Slide the HDD cage towards the bottom of the chassis, and swing the HDD cage into the chassis body.

4. Align the two screw slots at the top with the threaded holes in the chassis; secure the HDD cage with two screws.

5. Secure the HDD cage with a single screw at the tab located at the lower right corner of the HDD cage (see attachment **B**, figure A-13).

6. Hook up the HDD cable to the HDD. Cable connectors are keyed and fit only one way. Connect the other end of the HDD cable to the SCSI connector on the 3FEP motherboard.

7.   Connect a power connector from the power supply to the HDD.

NOTE: 1.   You must power-down CRS to perform the following procedure. (Use Part 1–CRS Power-Down Procedures.)

2.3 Reconfigure 1FEP, 2FEP, and 4BKUP Procedure

NOTE: 1.   You must remove and replace circuit cards in an anti-static work area using approved anti-static procedures.

---

1.   Remove all cabling from 1FEP, 2FEP, and 4BKUP, and remove FEPs from the equipment rack to the antistatic work area.

2.   Remove the right side covers of 1FEP, 2FEP and 4BKUP using the following procedure:

   a.   Remove the right three screws on the back of the system unit (see attachment **B**, figure A-1). These screws secure the right side access panel of the system to the chassis.

   b.   Pull the panel backward while lifting it upward.

3.   Remove the screws holding the slot 5 DECtalk cards in FEPs 1, 2, and 4BKUP; retain the screws (see attachment **B**, figure A-13).

4.   Remove the DECtalk cards from each FEP.

NOTE: 2.   The DECtalk cards will be used in the new 3FEP.

---

5.   Install slot covers in slot 5 using a retaining screw for each FEP.

6.   Replace the right side covers on 1FEP, 2FEP, and 4BKUP by reversing the procedure in step 2.

2.4 New 3FEP DECtalk Cards Input/Output (I/O) Address Configuration Procedure

1.   Reconfigure each DECtalk card removed in section 2.3 for the appropriate I/O address through switch 2 (SW2), as defined in table 1 and pictured in attachment **B**, figure A-11.

NOTE: 1.   Depending on the CRS site configuration, there may be as many as five DECtalk cards per FEP, located in slots 2 through 6.

Table 1. DECtalk Card Switch 2 (SW2) Settings

Module Number	SW2-1	SW2-2	SW2-3	SW2-4	SW2-5	SW2-6	I/O Address	PC Slot
4	off	off	off	off	on	on	380	6
3	off	off	on	on	off	on	360	5
2	on	off	on	off	off	on	328	4
1	off	on	off	on	off	off	250	3
0	off	off	off	on	off	off	240	2

NOTE: 2. Regardless of FEP, DECtalk card configuration remains constant, meaning modules 0, 1, 2, 3, and 4 are configured the same for each FEP.

2. Use table 1 to set up a DECtalk card with the I/O address: 240.
   Install the DECtalk card into slot 2 of 3FEP, and reinstall a retaining screw.

3. Using table 1, set up a DECtalk card with the I/O address: 250.
   Install the DECtalk card into slot 3 of 3FEP, and reinstall a retaining screw.

4. Using table 1, set up a DECtalk card with the I/O address: 328.
   Install the DECtalk card into slot 4 of 3FEP, and reinstall a retaining screw.

5. Replace the 3FEP cover by reversing the procedure in section 2.3, step 2.

6. Install all FEPs into the equipment rack.

2.5 ASM Card Installation Procedure

1. Remove the ASA slot 9 cover by removing the two screws.

NOTE: You must set five jumpers on the ASM card.

2. Take the new ASM card (ASN: B440-2A6A3) and set the jumpers for slot 9 of the ASA in accordance with table 2.

3. Install the new ASM card into slot 9 of the ASA chassis, and tighten the two screws.

4. Using table 2, repeat steps 2 and 3 for the existing ASM cards in slots 4 through 8.

Table 2. ASM Card Jumper Settings

	ASA Slot #	Silence Alarm Jumper "JP1"	ACP Channel Sel. Jumper "JP2" & "JP3"	BKUP Live/ Playback Cntrl Jumper "JP4"	FEP Select Jumper "JP5"
ASM 1 (channel 1)	1	EN (Enable)	1	BUL2	FEP1
ASM 2 (channel 2)	2	EN (Enable)	2	BUL2	FEP1
ASM 3 (channel 3)	3	EN (Enable)	3	BUL2	FEP1
ASM 4 (channel 4)	4	EN (Enable)	4	BUL2	FEP2
ASM 5 (channel 5)	5	EN (Enable)	5	BUL2	FEP2
ASM 6 (channel 6)	6	EN (Enable)	6	BUL2	FEP2
ASM 7 (channel 7)	7	EN (Enable)	7	BUL2	FEP3
ASM 8 (channel 8)	8	EN (Enable)	8	BUL2	FEP3
ASM 9 (channel 9)	9	EN (Enable)	9	BUL2	FEP3
ASM PB1 (mon/playback chan 1)	PB1	DIS (Disable)	PB1	PB	FEP1
ASM PB2 (mon/playback chan 2)	PB2	DIS (Disable)	PB2	PB	FEP2

2.6 Operational and Spare ASC Jumper Setting and Cable Installation Procedure

1. Disconnect five DECtalk-ASC audio cables (labeled 4-1, 4-2, 4-3, 4-4, and 4-5).

2. Disconnect the two ACP-ASC audio cables.

3. Disconnect the ASC-4BKUP parallel port interface cables.

4. Disconnect the two ACP-ASC control cables.

5. Loosen the four front panel screws, and extract the ASC card.

6. On both the operational and spare ASC, set the backup channel configuration using the seven jumpers on JP1. Using all seven jumpers, move the jumpers to the side of the block listing the number of output channels for your site configuration. The center row of pins is the common row.

Example: Using **Figure 1** as a reference, if your site configuration had 5, 6, 9, or 10 channels, each jumper would connect from the center row of pins to the top row of pins. If your site configuration had 1, 2, 3, 4, 7, 8, 11, 12, or 13 channels, each jumper would connect from the center row of pins to the bottom row of pins.
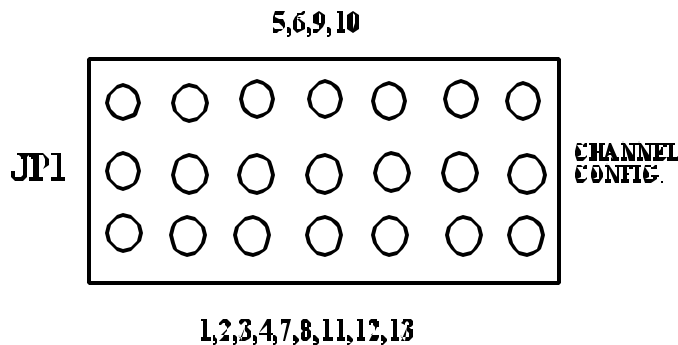
5,6,9,10

JP1   CHANNEL
        CONFIG.

1,2,3,4,7,8,11,12,13

Figure 1. ASM Card Jumper Block

7.   Insert the ASC back into the ASA, and tighten the four front panel screws.

8.   Reconnect the two ACP-ASC control cables.

9.   Reconnect the ASC-4BKUP parallel port interface cable.

10.   Reconnect the two ACP-ASC audio cables.

11.   Reconnect the DECtalk-ASC audio cables in accordance with table 3, with the exception of unused cable 4-4. Tie the unused cable back with a tie-wrap.

Table 3. DECtalk to ASC Audio Cables

From	To	Cable Label
4BKUP DECtalk 1 "J2" Port	ASC "BKUP Audio 1" Port	4-1
4BKUP DECtalk 2 "J2" Port	ASC "BKUP Audio 2" Port	4-2
4BKUP DECtalk 3 "J2" Port	ASC "BKUP Audio 3" Port	4-3
4BKUP DECtalk 5 "J2" Port	ASC "BKUP Audio 5" Port	4-5

CAUTION

Ensure unused DECtalk ASC cable 4-4 is not connected to the ASC.

2.7 New DECtalk-ASM Audio Cable Installation Procedure

1.   Using write-on cable labels, mark and connect the DECtalk-ASM audio cables for 3FEP in accordance with table 4.

2.   Reconnect and relabel the existing DECtalk-ASM audio cables on 1FEP and 2FEP in accordance with table 4 with the exception of the unused slot 5 DECtalk-ASM cables labeled 1-4 and 2-4. Tie the unused cables back with tie-wraps.

Table 4. DECtalk to ASM Audio Cables

From	To	Cable Label
1FEP DECtalk 1 "J2" Port	ASM 1 "IN Port"	1-1
1FEP DECtalk 2 "J2" Port	ASM 2 "IN Port"	1-2
1FEP DECtalk 3 "J2" Port	ASM 3 "IN Port"	1-3
2FEP DECtalk 1 "J2" Port	ASM 4 "IN Port"	2-1
2FEP DECtalk 2 "J2" Port	ASM 5 "IN Port"	2-2
2FEP DECtalk 3 "J2" Port	ASM 6 "IN Port"	2-3
3FEP DECtalk 1 "J2" Port	ASM 7 "IN Port"	3-1
3FEP DECtalk 2 "J2" Port	ASM 8 "IN Port"	3-2
3FEP DECtalk 3 "J2" Port	ASM 9 "IN Port"	3-3
1FEP DECtalk 5 "J2" Port	ASM PB1 "IN Port"	1-5
2FEP DECtalk 5 "J2" Port	ASM PB2 "IN Port"	2-5

CAUTION

Ensure the unused DECtalk-ASM cables 1-4 and 2-4 are not connected to any ASM ports.

2.8 FEP Cable Installation Procedure

1.   Install the 1FEP switch VGA video cable (ASN: B440-2W3) between the 1FEP video out and switch position A.

2.   Install the 1FEP switch PS/2 keyboard cable (ASN: B440-2W4) between the 1FEP keyboard connection and switch position A.

3. Install the LAN cable segment (ASN: B440-2W1) and BNC tee connector (ASN: B440-4J1) to connect the 1FEP PC to the existing CRS LAN; 1FEP connects between LAN bridge and LAN server (See attachment **B**, figure A-15)

4. Install the 2FEP switch VGA video cable (ASN: B440-2W3) between the 2FEP video out and switch position B.

5. Install the 2FEP switch PS/2 keyboard cable (ASN: B440-2W4) between the 2FEP keyboard connection and switch position B.

6. Install the LAN cable segment (ASN: B440-2W1) and BNC Tee connector (ASN: B440-4J1) to connect the 2FEP PC into the existing CRS LAN; 2FEP connects between 4BKUP and 3FEP (See attachment **B**, figure A-15).

7. Install the new 3FEP switch VGA video cable (ASN: B440-2W3) between the 3FEP video out and switch position C.

8. Install the new FEP switch PS/2 keyboard cable (ASN: B440-2W4) between the 3FEP keyboard connection and switch position C.

9. Install the new LAN cable segment (ASN: B440-2W1) and BNC Tee connector (ASN: B440-4J1) to connect the 3FEP PC into the existing CRS LAN; 3FEP connects between 2FEP and 5MP (See attachment **B**, figure A-15).

10. Install the 4BKUP switch VGA video cable (ASN: B440-2W3) between the 4BKUP video out and switch position D.

11. Install the 4BKUP switch PS/2 keyboard cable (ASN: B440-2W4) between the 4BKUP keyboard connection and switch position D.

12. Install the LAN cable segment (ASN: B440-2W1) and BNC tee connector (ASN: B440-4J1) to connect the 4BKUP PC into the existing CRS LAN; 4BKUP connects between LAN server and 2FEP (See attachment **B**, figure A-15).

2.9 New Transmitter Audio Output Cable Installation Procedure

1. Connect the ASM card OUT1 port of the new ASA chassis by installing the new audio output cable at slot 9 to the demarc panel position for the new transmitters.

2. Install the new NWRSAME (if available) into the top panel of the 5MP workstation (if available).

3. Install the NWRSAME-ACP interface cable from the NWRSAME rear connector to the "NWRSAME INPUT socket 1" of ACP2 rear panel; this connects to pins 2, 6, 7, 9, and 10 of the NWRSAME (if available).

NOTE: This completes the hardware modification.

PART 3–CRS POWER-UP PROCEDURES

WARNING

Before powering-up the FEPs, you must perform the *New Configuration Physical Verification* procedure contained in attachment C to verify proper system configuration. Failure to perform the procedure can result in transmitter broadcasts assigned to incorrect output channels.

3.1 Power-Up FEP Procedure

1. Press the **ON/OFF** switch (on the front center right of the enclosure) to power up the FEPs. A green power LED on each FEP lights when the power is on. The FEPs can be powered up in any sequence. The FEPs go through a memory check, display the system configuration [as recognized by the basic I/O system (BIOS)], then boot the embedded operating system. At the completion of the boot process, the console screen displays the prompt:

    Console Login:

    The embedded operating system automatically initializes to a preset level and waits for final start-up commands from the master MP.

NOTE: The FEPs share a common console through the *Shared Monitor Switch*. The console displays messages while completing the boot process of the FEP switched in.

---

2. Use the *Shared Monitor Switch* to select the next FEP. The console monitor displays:

    Press F1 to resume, F2 to Setup.

3. Press **F1** to complete the boot process. The prompt displays:

    Console Login:

4. Repeat for each remaining FEP.

3.2 Power-Up Main Processors Procedure.

NOTE:	1. Power-up 0MP as the master main processor and 5MP as the shadowing processor.

Press the **ON/OFF** switch (on the front center right of the enclosure) to power up the MPs. A green power LED on each MP lights when the power is on. The MPs can be powered up in any sequence. The MPs go through a memory check, file system check, system configuration verification (as recognized by the BIOS), and then boot the embedded UNIX operating system. At the completion of the boot process, the workstation screen displays the *CRS Login* screen. The MPs are now ready for the initialization of the CRS application software.

NOTE:	2. For Build 6.4 and higher: Following power-up, CRS displays the *Security Screen*. To continue the login process, click the **Acknowledge** button.
	3. Whenever the MPs are powered up, they automatically step through the boot process to the multiuser mode without operator intervention.

3.3 CRS Application Software Installation on the New FEP Procedure

    1.   If the 0MP was rebooted, at the *Login GUI* window, login as the root user. Click the **KDE Desktop Application Starter** icon (the big K Wheel icon) in the lower left part of the *KDE Desktop* panel. If the 0MP was not rebooted, proceed to step 2.

    2.   Click the **SCO Control Center** pop-up menu selection.

NOTE:	1. You also may start the *SCO Control Center* by clicking on the **SCO Admin** icon on the KDE Desktop panel (the *Swiss Army Knife* icon).

    3.   Select and double-click the **Software_Management** menu selection.

    4.   Double-click the **Applications Installer** menu selection.

    5.   Insert the CD-ROM into the CD drive of the selected installation MP, then select **CD-ROM_1** from the pop-up menu, following the *Install from:* prompt in the upper half of the **Application Installer** window.

    6.   After the CRS application package icons (**crsopsais**, **crsopsfpm**, and **crsopsmpm**) are displayed immediately below the *Install from* prompt, select **crsopsais**, and click **Install** (Note: **crsopsfpm** and **crsopsmpm** can ONLY be installed indirectly throught **crsopsais**).

EHB-7   Revision A, Errata 2
Issuance 02-09
03/21/02   A-12

7. Respond to the prompts displayed in the **Add Application: crsopsais** and **auto_install** terminal windows.

NOTE: 2. The *Add Application: crsopsais* window and the *auto_install* window are used to display the installation activity log, as well as the prompts to the installation operator. The log information and the prompt sequences vary, depending on the responses to the prompts.

---

8. When the installation process completes, the CRS displays the following:

NOTE: 3. Shutting down the installation MP [0MP | 5MP] is an option. It is not necessary to shut down after the software has been installed on an FEP. A shutdown is RECOMMENDED after CRS software has been installed on an MP to ensure that the installation MP [0MP | 5MP] and the other MP[0MP | 5MP]are functionally synchronized as CRS master and CRS shadow.

Continue [0MP | 5MP] shutdown? (Default: y)

---

9. Press **Enter** to continue.

NOTE: 4. For Build 6.4 and higher: Following power-up, CRS displays the *Security Screen*. To display Login screen and continue the login process, click the **Acknowledge** button.

---

10. Use the *Shared Monitor Switch* on the equipment rack to select the next FEP for rebooting. The console monitor displays:

    Press <F1> to resume, <F2> to Setup.

11. Press **F1** to complete the boot process. The prompt displays:

    Console Login:

12. Repeat for each remaining FEP.

PART 4–CRS LOGIN, APPLICATION SOFTWARE ERROR VERIFICATION, AND TEST DATABASE ASCII FILE LOADING PROCEDURES

4.1 CRS Login Procedure

NOTE: 1. For Build 6.4 and higher: Following power-up, CRS displays the Security Screen. To continue the login process, click the **Acknowledge** button.

> 2. The CRS Login Screen allows you to log onto CRS. This screen contains two fields: *Login ID* and *Password*.

1.   Type **admin** (for system administrator) in the Login ID field, and press **Enter**. The cursor moves to the Password field.

2.   Type in your assigned password, and press **Enter** to complete the CRS login process. The system displays the CRS main display. In addition, the system displays the following error message:

System is not operational. Perform 'Start CRS' to start system.

3.   Click **OK** to clear the message.

> **NOTE:**   3.   The error message is only a status message indicating CRS is not running.

4.2 CRS Applications Software Installation Error Verification Procedure

1.   Open a UNIX Shell:

a.   Click **Maintenance**.

b.   Click **UNIX Shell**.

2.   Type **grep ERROR /crs/install.log** and press **Enter**.

3.   Ensure there are no error messages. Any error messages must be reported to the CRS Site Support Staff at 301-713-0191, x145 or x144.

4.   Type **grep WARNING /crs/install.log** and press **Enter**.

5.   Ensure there are no error messages. Any error messages must be reported to the CRS Site Support Staff at 301-713-0191, x145 or x144.

> **NOTE:**   Ignore any IP address error messages.

4.3 CRS Test Database ASCII File Loading Procedure

> **NOTE:**   1.   The following instructions for loading the CRS test database ASCII file assume everything is being done with 0MP set as the MP.

1.   Place the diskette with CRS test database ASCII files in the 0MP diskette drive to copy the desired file from the diskette to CRS.

a. Type **mdir a:** and press the **Enter** key to display a directory listing of the files on the test database diskette. There are 13 files on the diskette with the following filename convention:

TYP*W*_CFG.ASC   where *W* = 1 - 4
LRG*X*_CFG.ASC   where *X* = 5 - 8
MAX*Y*_CFG.ASC   where *Y* = 9
MAX*Z*_CF.ASC   where *Z* = 10 - 13

(*W*, *X*, *Y*, and *Z* represent the number of transmitters your CRS supports.)

b. Locate the applicable test database ASCII file.

c. Type **mcopy -t a:*filename* /crs/data/SS/*filename*** (where *filename* is the name of the CRS test database ASCII file to be used).

d. Press the **Enter** key.

2. Click and hold the left mouse button on any white space, move the cursor to select **XCRS_SITE Utility,** and release the button to bring up the *XCRS_SITE Utility* window.

3. Click the **Select ASCII Site Setup** button to bring up the list of ASCII files.

4. Select the desired database ASCII filename copied from the diskette in section 4.3, step 1.c, and double click.

NOTE: 2.   The directory selection block has a default directory name of */crs/data/SS*, and the file filter block has a default file name of */crs/data/SS/*.ASC*. If the desired filename does not appear, it may have copied to the wrong directory in section 4.3, step 1.c. In which case, change the default directory name to the directory specified in section 4.3, step 1.c. The other reason the filename does not appear is because it is being filtered out. Remember, UNIX is case sensitive and if copied with an asc extension in lowercase, it does not display. Change the filter file name to **/crs/data/SS/*.asc**, and the filename displays.

---

5. Select **Initialize System Configuration and Database** to ensure the entire system database and configuration is erased and replaced.

6. Click **DO NOT CLEAR the Dictionary-related table data selecting box** to deselect this option.

7. Click the **Start Site Configuration** button. The system displays:

Will now perform FULL site reconfiguration. Continue?

8. Click **OK**. The "wristwatch" and the "working" message display. Several messages scroll by. The last message reads:

Finished with site configure.

Revision A, Errata 2   EHB-7
Issuance 02-09
A-15   03/21/02

The "wristwatch" and "working" message disappear. Ensure there are no error messages at the completion of the site configuration process.

9. Restart CRS by clicking on **Start CRS System**. The system displays:

   The CRS system will be STARTED. Continue?

10. Click **OK**. The "wristwatch" and the "working" message display. Several messages scroll by. The last message refers to starting 4BKUP. The "wristwatch" and "working" message disappear.

11. Click **Exit** to close the *XCRS_SITE Utility* window.

12. Click the **UNIX shell** window to select it. At the prompt, type **Exit** and press **Enter** to close the UNIX Shell.

13. Open the *System Status* window.

    a. Click **System**.

    b. Click **System Status.**

14. Monitor the *System Status* window and ensure the system is operational.

PART 5–POST HARDWARE EXPANSION CHANNEL OPERABILITY VERIFICATION PROCEDURES

5.1 Channel Operability Verification Procedure

NOTE:	CRS test database ASCII files contain test messages configured for continuous broadcast for channel operability verification.

1. Connect a monitor speaker or headphones to the ACP.

2. Use the **Channel Select** control to select each channel, one at a time, and monitor the output for the correct message (i.e., with Channel one selected, the message output is: *This is transmitter one, audio switch module one.*)

5.2 FEP Backup Mode Channel Operability Verification Procedure

1. Click **Maintenance**.

2. Click **Front-End Processor Switch**.

3. Select **1** in the *Front-End Processor Switch* window under FEP.

4. Select **Out** under *Switch*.

5. Select **Yes** under *Backup*

6.   Click the **Save the current record** icon to execute the FEP switch process. The *Question* box displays:

     Switch out the FEP FULLY offline ???

7.   Click **OK** to continue. The system displays the "wristwatch" and the message:

     Requesting FEP Switchout.

8.   Monitor the *FEP1* and *BKUP System Status* icons and verify the FEP1 is in the backup mode and the *BKUP* icon displays the online status.

9.   When the FEP switch process is complete, repeat section 5.1, steps 1 and 2.

10.   Upon completing the FEP backup mode channel operability verification, perform the following to display the *Front-End Processor Switch* window:

     a.   Click **Maintenance**.

     b.   Click **Front-End Processor Switch**.

11.   Under FEP: Select **1** in the *Front-End Processor Switch* window.

12.   Under *Switch*: Select **IN** to switch FEP1 back in.

13.   Click the **Save the current record** icon to execute the FEP switch process. The system displays the "wristwatch" and the message:

     Requesting FEP switch-in...

14.   Monitor the FEP1 and BKUP System Status icons, verify FEP1 is online, and the BKUP icon displays the backup mode status.

15.   When the system returns to normal operation, perform the following steps to close the *Front-End Processor Switch* window and stop CRS:

     a.   On the *Front-End Processor Switch* window:

         1)   Click **File**.

         2)   Click **Exit**.

     b.   On the *Main CRS* menu:

         1)   Click **System**.

         2)   Click **Stop System**.

         3)   Click **OK**.

         4)   Click **Close**.

16.   Monitor the *System Status* window and verify the CRS application has stopped.

Revision A, Errata 2   EHB-7
Issuance 02-09
A-17   03/21/02

PART 6–ADDING NEW TRANSMITTER CHANNELS AND EDITING SITE DATABASE ASCII FILE PROCEDURES

6.1 Adding New Transmitter Channels Procedure

      1.   Click and hold the left mouse button on any white space, move the cursor to select **XCRS_SITE Utility**, and release the button to bring up the *XCRS_SITE Utility* window.

      2.   Click **Select ASCII Site Setup** button to bring up the list of ASCII files.

      3.   Select the current site database ASCII file, and double click.

      4.   Click **Add Transmitter(s)** button to start the **addxmt** program. It displays the number of channels available, the next available channel to be added, and its processor and slot.

      5.   Use the following steps to add a new transmitter to the *Site Database ASCII* file:

            a. **Mnemonic**

                1) Type option number **1** and press **Enter** to select *Mnemonic*.

                2) Type **a** and press **Enter** at the program prompt to add the *Mnemonic*.

                3) Type **mmmmm** and press **Enter** (where mmmmm is the desired *Mnemonic*), up to a length of 5 characters. The program returns the *Mnemonic*.

                4) Type **0** or press **Tab** and press **Enter** to complete the *Mnemonic* selection.

            b. **Call Sign**

                1) Type option number **2** and press **Enter** to select the *Call Sign*.

                2) Type **a** and press **Enter** at the program prompt to add *Call Sign*.

                3) Enter the *Call Sign* in the same manner as the *Mnemonic*, up to a length of 5 characters. The program returns the *Call Sign*.

                4) Type **0** or press **Tab** and press **Enter** to complete the *Call Sign* selection.

            c. **Frequency**

                1) Type option number **3** and press **Enter** to select *Frequency*. The *Frequency* option only allows a selection of one of the seven choices listed.

                2) Type **n** and press **Enter** (where n is the desired frequency choice). The program returns the *Frequency* choice by displaying an asterisk next to the *Frequen*cy selection.

                3) Type **0** or press **Tab** and press **Enter** to complete the *Frequency* selection.

d. **Location**

        1) Type option number **4** and press **Enter** to select *Location*.

        2) Type **a** and press **Enter** at the program prompt to add the *Location*.

        3) Enter *Location* (in the same manner as *Mnemonic* and *Call Sign*) up to a length of 40 ASCII characters. The program returns the *Location*.

        4) Type **0** or press **Tab** and press **Enter** to complete the *Location* selection.

    e. **Add Transmitter**

        1) Type option number **5** and press **Enter** to use all the parameters defined in the first four steps to configure a new transmitter in the database ASCII file. The program indicates a new transmitter is needed.

        2) Type **y** and press **Enter**. The program returns the assignment of each transmitter to its proper processor and slot. A message displays indicating the appropriate database ASCII file has been updated, and the original has been saved with the .SAV extension.

6. The program then asks if another channel is needed. If so, repeat steps **5a** through **e** for the next new channel. If not, type **n** and press **Enter** to exit the program.

6.2 Editing the Site Database ASCII File Procedure

1. When exit **addxmt** is done, the *Question* box displays:

    Ready to recompile selected ASCII file. Continue?

2. Click **Cancel** to close the *Question* box.

3. Select **Initialize System Configuration and Database** to ensure the entire system database and configuration is erased and replaced.

4. Click **Start Site Configure**. The *Question* box displays:

    Will now perform FULL site reconfiguration. Continue?

5. Click **OK** to recompile the database ASCII file. Upon completion of the database ASCII file recompile process, the system displays:

    Finished with site configure.

6. Restart CRS by clicking on **Start CRS System**. The system displays:

    The CRS system will be STARTED. Continue?

7. Click **OK**. The "wristwatch" and the "working" message display. Several messages scroll by. The last message refers to starting 4BKUP, and the "wristwatch" and "working" message disappear.

8. Click **Exit** to close the *XCRS_SITE Utility* window.

9. Open the *Alert Monitor* window:

   a. Click **System**.

   b. Click **Alert Monitor**.

NOTE:	No attempt is made by **addxmt** to establish station identifiers, broadcast programs, broadcast suites, message types, voice parameters, keep-alive messages, interrupt messages, etc. for the new channels. These must be configured through the CRS graphical user interface (see the *CRS Site Operator's Manual*) and updated in the site database ASCII file.

PART 7–ASM ALIGNMENT PROCEDURES

NOTE:	The output of each added ASM card must be aligned before placing in service. The alignments must be performed in the following sequence: 1. Verify ACP **Ref.** Mark Alignment. 2. ASM Card Alignment.

7.1 Verify ACP Ref. Mark Alignment Procedure

NOTE:	1.	You can perform the ACP Ref. mark alignment independently without any tools or equipment.
	2.	*Transmitter x* in this procedure refers to the channel under test.

1. Set up the CRS for Backup Live (BUL). No system database is required.

2. Set the index mark on the **tone volume control** knob to the *Ref.* position.

3. Push the **Transmitter x** and **Enable** buttons in sequence to start BUL on channel x. The buttons are located in the **BACKUP LIVE** block area on the ACP front panel.

NOTE:	3.	Do not send audio to a transmitter while performing this procedure.

4. Push the **Alert Tone 1** button to generate the 1050 Hz warning alert tone (WAT).

5. Ensure the VU meter on the ACP front panel indicates **0 dBm**.

NOTE:	4.	The 1050 Hz WAT lasts 10 seconds.

6.   Adjust the tone volume control for a reading of **0 dBm**.

7.   Repeat steps 4, 5, and 6 as necessary to obtain a reading of **0 dBm**.

NOTE:	5.	When the tone volume control is set to the true Ref. position, the ACP provides the selected WAT output level of **0 dBm**.

8.   To stop BUL, first push the **Enable** button; then, push the **Transmitter x** button.

7.2 ASM Card Alignment Procedure

NOTE:	1.	This alignment requires two people: one in the operations room and one in the equipment room.
	2.	When performing any of the following alignments, the system's output(s) must be disconnected from the telecommunications link and terminated into a 600-ohm load. All audio signal level measurements are taken across the 600-ohm load.

1.   Assemble the following required Equipment:
   • dB Meter to read the audio signal level
   • Small jeweler's screwdriver
   • 600-ohm dummy load with RJ-11 plug attached

2.   Set up the CRS for BUL. No system database is required.

3.   Set the index mark on the **tone volume control** knob to the Ref**.** position.

4.   Push the **Transmitter x** and **Enable** buttons in sequence to start BUL on channel x. The buttons are located in the **BACKUP LIVE** block area on the ACP front panel.

5.   Plug the RJ-11 connector (with the 600-ohm load attached) into the RJ-11 jack of **OUT 1** on the ASM of transmitter **x** (output channel **x**).

6.   Connect the dB meter across the 600-ohm load.

7.   Push the **Alert Tone 1** button to send a WAT to the **OUT 1** jack of ASM card 1.

8.   Measure and record the signal level in dB across the 600-ohm load.

9.   Using a small jeweler's screwdriver, adjust the transmitter gain control potentiometer through the ASM front panel until a reading of **0 dBm** is obtained across the 600-ohm load.

NOTE: 3.   Table 5 provides equivalent V rms and V p-p values related to dBm (all referenced to 600-ohms) to reference readings taken with measurement equipment not reading directly in dBm.

Table 5. Voltages <u>vs</u> dBm (into 600-ohm load)

dBm	RMS	P-P		dBm	RMS	P-P		dBm	RMS	P-P
10	2.440	6.93		-4	0.480	1.35		-17	0.110	0.301
9	2.183	6.17		-5	0.430	1.20		-18	0.097	0.270
8	1.946	5.50		-6	0.390	1.03		-19	0.087	0.240
7	1.734	4.90		-7	0.345	0.96		-20	0.0775	0.215
6	1.546	4.37		-8	0.306	0.85		-21	0.690	0.194
5	1.377	3.89		-9	0.275	0.76		-22	0.061	0.170
4	1.228	3.47		-10	0.245	0.68		-23	0.054	0.152
3	1.094	3.01		-11	0.213	0.61		-24	0.048	0.135
2	0.975	2.75		-12	0.192	0.54		-25	0.043	0.120
1	0.869	2.46		-13	0.173	0.48		-26	0.039	0.108
0	0.775	2.15		-14	0.154	0.43		-27	0.034	0.096
-1	0.690	1.94		-15	0.138	0.38		-28	0.031	0.085
-2	0.610	1.70		-16	0.125	0.34		-29	0.028	0.076
-3	0.540	1.52						-30	0.024	0.068

NOTE:

4. The WAT output from the ACP nominally lasts 10 seconds. It is recommended a second person push the **Alert Tone1** button for a near continuous tone output. This will smooth out the calibration effort and minimize the time required.

5. Primary (Out1) and secondary (Out2) outputs are two independent outputs; however, the output level of Out1 is affected by approximately 1.5 dB if Out2 is loaded.

6. During BUL, the VU meter monitors the ACP tone output, not the output of the ASM card. The ACP tone output is sent to the ASM card via the ASC for final output.

---

10. Repeat steps 7, 8, and 9 as necessary to obtain a reading of **0 dBm** for the channel under test.

11. To stop BUL, first push the **Enable** button; then, push the **Transmitter x** button.

12. Repeat steps 1 through 10 to align each of the new ASM cards in the system.

13. Activate each ASM card output by pushing the respective **Transmitter x** button and the **Enable** button.